

(12) UK Patent Application (19) GB (11) 2 115 203 A

- (22) Date of filing**

12 Nov 1982

- (30) Priority data**

(31) 8134134

- (32) 12 Nov 1981

(33) United Kingdom (GB)

- (43) Application published

1 Sep 1983

- (51) INT CL³ G11B 3/60

(52) Domestic classification

- G5R FL**

Documents cited

- EP A 0017004

GB 1489505

GB 1483826

GB 1412550

GB 1412000
CB 1332669

GB 1332008
GB 1189729

GB 1189729
GB 1187788

- GB 1187/88**
(58) Field of search

Field GER

G8H
E28

- F28**
(71) Applicants

Applicants

Loric Limited

Logic Limited
(Great Britain)

**(Great Britain
8, Queen Street**

6 Guy Street
London EC4A 3DF

Learnington School Association

- Warwick**
(72) Leicester

Inventor
David Keith Griffiths

- David Keith Griffiths**
 47-41 Avenue A, Apt. 4 (an Address for

Agent a

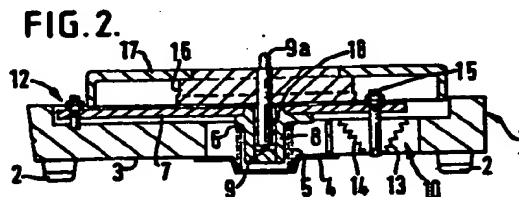
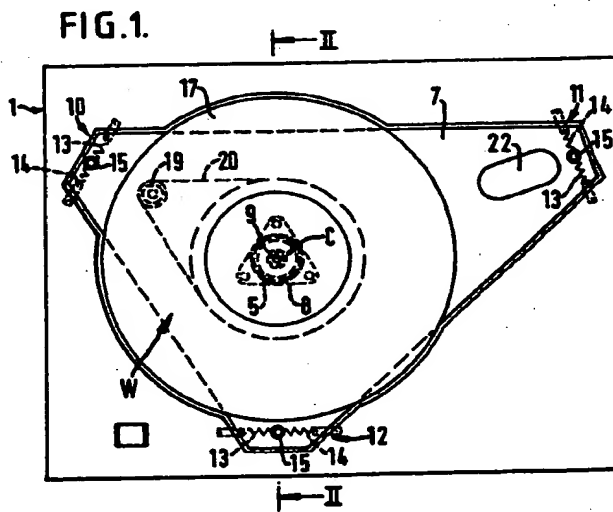
Service

Withers and Roger

17 Waterloo Place
London, W. 1

Learning to

CV32 5LA



GB 2115203 A

1/1

FIG. 1.

II

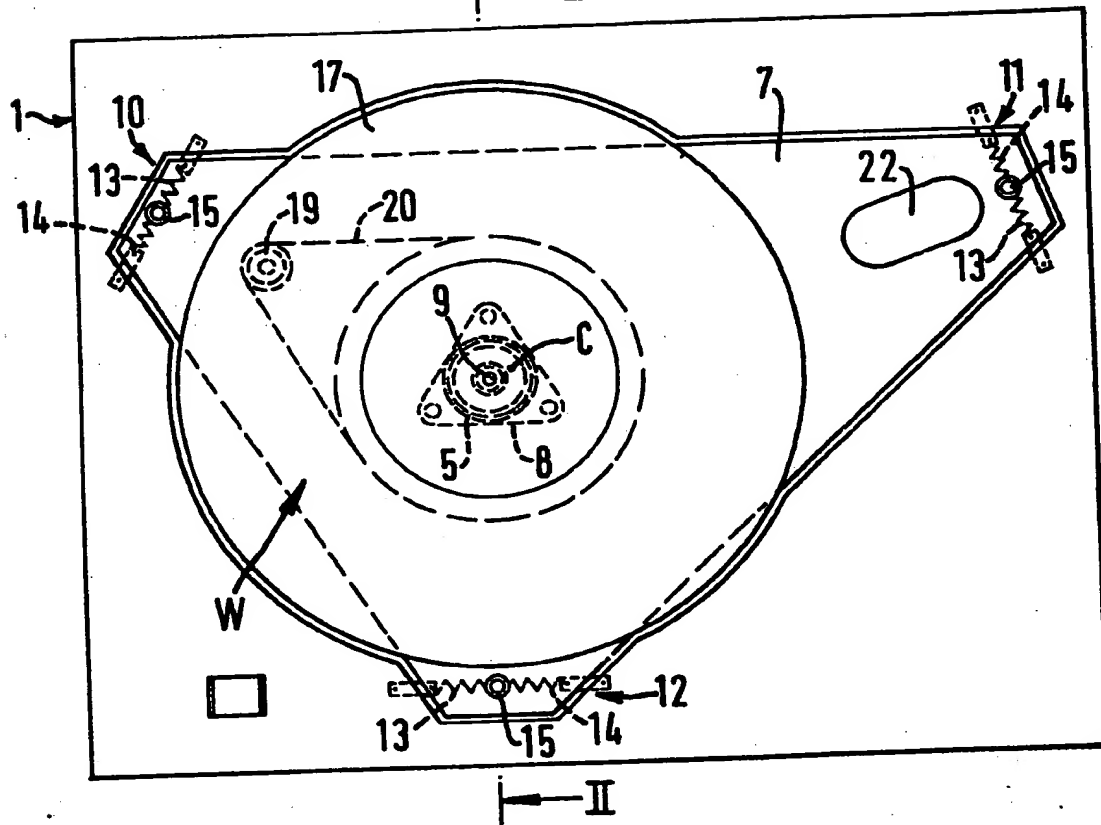
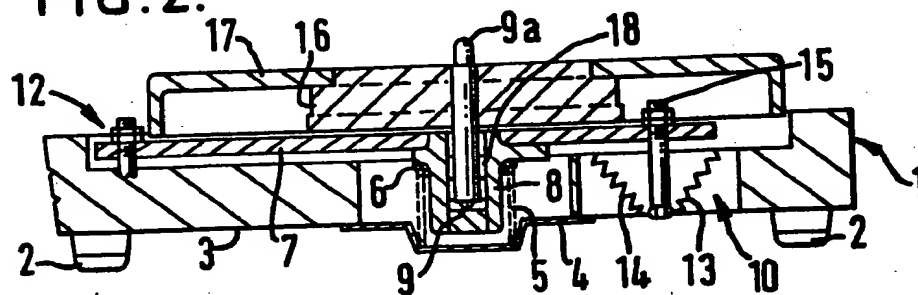


FIG. 2.



BEST AVAILABLE COPY

SPECIFICATION

A resilient mounting

- 5 The invention is concerned with a resilient mounting and is particularly, but not exclusively, concerned with a resilient mounting for a turntable platter.

- Various suspensions have been proposed
10 hitherto for mounting a turntable platter and a sub-chassis on a plinth. One such type of suspension is known as the three-point suspension which is normally designed to provide dynamic balance with elimination of feedback
15 and acoustic isolation. The suspension has to be carefully selected so that the sub-chassis and platter will not oscillate horizontally or vertically at a frequency likely to disturb the means which sense the record groove modulations. Moreover, the suspension must allow
20 yaw of the platter and sub-chassis as well as rolling motion. Whilst the suspension can be selected relatively easily to cater for any one of the foregoing movements, it is not easy to produce a multi-point suspension which will
25 cater correctly for several such movements and a compromise has to be reached. An object of the present invention is to provide a resilient mounting which can be used to
30 mount a turntable platter and a sub-chassis in an improved manner.

- According to one aspect of the invention there is provided a turntable platter and sub-chassis having a resilient mounting comprising
35 a resilient main support for the sub-chassis arranged adjacent the mass-centre of the sub-chassis and platter, and at least one further resilient support for the sub-chassis spaced from the first support. Preferably the main
40 support comprises a coil spring arranged in use, around a bearing housing on the sub-chassis. In a preferred embodiment three further supports are provided for the sub-chassis, the three outer supports being spaced from
45 the main support and from each other. Each further support may comprise a pair of inclined springs extending between a plinth and mounting means on the sub-chassis.

- By arranging the resilient main support adjacent the mass centre of the sub-chassis and
50 platter, the main support can be selected to cater for the correct degree of oscillation in the horizontal and vertical planes on which the or each further support will have little
55 influence compared to the main resilient support. The or each further support steadies the main chassis and is preferably arranged to cater for the desired degree of yaw and roll on
60 which the main support will have little influence compared to the or each further support. Therefore, where the present invention is used to mount a turntable platter and sub-chassis, less compromise in the suspension is required than hitherto.

- 65 According to another aspect of the inven-

tion there is provided a resilient mounting comprising a resilient support arranged, in use, adjacent the mass-centre of a body supported thereby, and a further resilient support
70 for the body spaced from the first resilient support.

A resilient mounting in accordance with the invention will now be described by way of example with reference to the accompanying
75 drawings in which:-

Figure 1 is a plan view of part of a turntable; and

Figure 2 is a cross-section of the turntable shown in Fig. 1 on the line II-II in Fig. 1.

- 80 The plinth 1 has the usual feet 2 and a base 3. The base has a circular dished plate 4 secured thereto for locating one end of a compression coil spring 5 constituting the aforementioned resilient main support. The
85 other end of the spring spigotally locates on a washer 6 adjacent the underside of a sub-chassis 7. The sub-chassis carries a tubular housing 8 for a main bearing 9 on a spindle 9a and the spring 5 and washer 6 are coaxial
90 with the housing.

- Three outer resilient supports 10, 11 and 12 are arranged between the plinth 1 and the sub-chassis 7. Each outer resilient support comprises two inclined tension springs 13, 14
95 extending between the plinth and a pin 15 attached to the sub-chassis. As seen from Fig. 1 the springs 13, 14 of each outer support lie in a common vertical plane which is at right angles to a radius drawn between the axis of
100 the main bearing 9 and the pin 15. The pin 15 can be adjusted axially relative to the sub-chassis to vary the configuration and loading of springs 13, 14.

- The spindle 9a is rotatably fast with a sub-platter 16 on which a main platter 17 for a
105 record is mounted and runs in a sleeve bearing 18 in the housing 8. The term "platter" as used herein embraces the sub-platter 16 and main platter 17. In certain cases no sub-platter is provided, the platter in such a case
110 being mounted directly on the spindle 9a.

The plinth 1 houses the usual drive-motor (not shown) having a drive pulley 19 (Fig. 1) for turning the platter through a belt 20.

- 115 The sub-chassis 7 is formed with an aperture 22 for receiving a tone arm base (not shown).

- The mass centre of the platter and sub-chassis is indicated at C which is adjacent the
120 spring 5. The spring 5 is selected so that oscillation in the vertical and horizontal planes will not exceed the recognized desired maximum frequency likely to disturb the means which sense the record groove modulations
125 e.g. 3 to 4 Hertz. The outer springs 13, 14 are relatively light compared to spring 5 as they merely need to "steady" the sub-chassis vertically and keep it level. Therefore the springs 13, 14 will offer very little resistance
130 to the vertical or horizontal oscillations of the

sub-chassis and platter. It can be seen, therefore, that selection of the spring 5 to provide the desired oscillation characteristic is not difficult.

- 5 As the spring 5 is close to the mass centre C it will offer very little resistance to yaw or roll of the sub-chassis and platter. However, as the outer springs 13, 14 are well placed from the mass centre C they will offer relatively greater resistance and can be selected and positioned in order to provide the desired degree of oscillation e.g. 3 to 4 Hertz in yaw and roll. Obviously, the rate of the spring 13, 14 and their angles of inclination can be varied to provide the required oscillation characteristics but the invention is not limited to the use of dual springs at each outer resilient support.

20 With such an arrangement, vertical and horizontal movement is controlled by spring 5 and yaw and roll by springs 13, 14. By centering the basic movements on particular springs, far less compromise is necessary than with prior arrangements where all movements have to be catered for by, say, the three springs of a three-point suspension. As compromise is reduced, the suspension provides improved reproduction of sound and improved resistance to external shock.

- 30 Although springs are used in the preferred embodiment it is envisaged that a fluid or other type of resilient suspension could be utilised.

35 Whilst the mass centre has been indicated as offset from the axis of bearing 9, a counterweight can be arranged adjacent zone W (Fig. 1) to shift the mass centre to the axis of the bearing or to some other point depending on the required location of the spring 5.

- 40 The resilient mounting is particularly applicable to turntables but may be used in other applications where fine control of multi-directional movement is required.

45 CLAIMS

1. A turntable platter and sub-chassis having a resilient mounting comprising a resilient main support for the sub-chassis arranged adjacent the mass-centre of the sub-chassis and platter, and at least one further resilient support for the sub-chassis spaced from the first support.

2. A turntable platter and sub-chassis according to claim 1 in which the main support is a coil spring arranged around a bearing housing on the sub-chassis.

3. A turntable platter and sub-chassis according to claim 2 in which the bearing housing contains a bearing for rotatably mounting a spindle for the platter.

4. A turntable platter and sub-chassis according to claim 2 or 3 in which the spring extends between location means on the bearing housing and a plinth.

5. A turntable platter and sub-chassis according to any preceding claim in which the further resilient support comprises a pair of inclined springs extending between a plinth and mounting means on the sub-chassis.

6. A turntable platter and sub-chassis according to claim 5 in which the springs are inclined in a common vertical plane.

7. A turntable platter and sub-chassis according to claim 5 or 6 in which the common plane is at right angles to a radius drawn between the axis of a spindle for the turntable platter and the said mounting means.

8. A turntable platter and sub-chassis according to claim 5, 6 or 7 in which the mounting means is adjustable to enable the inclination and/or loading of the springs to be varied.

9. A turntable platter and sub-chassis according to any preceding claim in which three further said resilient supports are provided for the sub-chassis, the three supports being spaced from each other.

10. A resilient mounting comprising a resilient support arranged, in use, adjacent the mass centre of a body supported thereby, and a further resilient support for the body spaced from the first resilient support.

11. A turntable platter and sub-chassis constructed and arranged substantially as described herein with reference to the accompanying drawings.

Printed for Her Majesty's Stationery Office
by Burgess & Son (Abingdon) Ltd.—1983.
Published at The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.

BEST AVAILABLE COPY